

Express Mail No. EL709937663US

We claim:

1. A flame-retardant thermoplastic resin composition comprising (A) 100 weight parts of a thermoplastic resin, (B) 10 to 300 weight parts of particulate metal hydroxide; (C) 0.01 to 50 weight parts of a branched polyorganosiloxane having alkoxy groups and described by average unit formula $R^1_a(R^2O)_bSiO_{(4-a-b)/2}$, where R^1 and R^2 are monovalent hydrocarbon groups selected from the group consisting of alkyl, alkenyl, and aryl groups, a is 0 or a positive number; b is a positive number; and $a + b$ is a number from 0.75 to 2.5; (D) 0.01 to 50 weight parts of a branched polyorganosiloxane having silanol groups and described by average unit formula $R^3_a(HO)_bSiO_{(4-a-b)/2}$, where R^3 is a monovalent hydrocarbon group selected from the group consisting of alkyl, alkenyl, and aryl groups, a is 0 or a positive number, b is a positive number, and $a + b$ is a number from 0.75 to 2.5; and (E) 0.01 to 10 weight parts of a condensation reaction promoting catalyst.
2. A flame-retardant thermoplastic resin composition according to Claim 1, where component (A) is a polyolefin-based resin.
3. A flame-retardant thermoplastic resin composition according to Claim 1, where component (B) is particulate magnesium hydroxide.
4. A flame-retardant thermoplastic resin composition according to Claim 1, where the alkyl groups of component (C) are methyl groups, and the aryl groups are phenyl groups.
5. A flame-retardant thermoplastic resin composition according to Claim 1, where R^3 is selected from the group consisting of methyl and phenyl.
6. A flame-retardant thermoplastic resin composition according to Claim 1, where the alkoxy groups of component (C) are selected from the group consisting of methoxy and ethoxy.

T02290 T523E50

Express Mail No. EL709937663US

7. A flame-retardant thermoplastic resin composition according to Claim 1 further comprising (E) a silica powder having a BET specific surface area of 50 m²/g or greater.
8. A flame-retardant thermoplastic resin composition according to Claim 1, where component (B) has a mean particle size between 0.05 and 10 μ m.
9. A flame-retardant thermoplastic resin composition according to Claim 1 comprising 50 to 150 weight parts of component (B) per 100 weight parts of component (A).
10. A flame-retardant thermoplastic resin composition according to Claim 1, where component (C) comprises 1 to 40 wt% alkoxy groups.
11. A flame-retardant thermoplastic resin composition according to Claim 1, where component (C) has a weight-average molecular weight between 500 and 10,000.
12. A flame-retardant thermoplastic resin composition according to Claim 1 comprising 0.1 to 30 weight parts of component (C) per 100 weight parts of component (A).
13. A flame-retardant thermoplastic resin composition according to Claim 1, where component (D) comprises 1 to 40 wt% hydroxy groups.
14. A flame-retardant thermoplastic resin composition according to Claim 1, where component (D) has a weight-average molecular weight between 500 and 10,000.
15. A flame-retardant thermoplastic resin composition according to Claim 1 comprising 0.1 to 30 weight parts component (D) per 100 weight parts of component (A).
16. A flame-retardant thermoplastic resin composition according to Claim 1, where mole ratio of number of moles of silanol groups in component (D) to number of moles of alkoxy groups in component (C) is within a range of 1:0.8 to 1:1.2

T02280-1523660

Express Mail No. EL709937663US

17. A method for manufacturing a flame-retardant thermoplastic resin composition comprising (A) 100 weight parts of a thermoplastic resin, (B) 10 to 300 weight parts of particulate metal hydroxide; (C) 0.01 to 50 weight parts of a branched polyorganosiloxane having alkoxy groups and described by average unit formula $R^1_a(R^2O)_bSiO_{(4-a-b)/2}$, where R^1 and R^2 are monovalent hydrocarbon groups selected from the group consisting of alkyl, alkenyl, and aryl groups, a is 0 or a positive number; b is a positive number; and $a + b$ is a number from 0.75 to 2.5; (D) 0.01 to 50 weight parts of a branched polyorganosiloxane having silanol groups and described by average unit formula $R^3_a(HO)_bSiO_{(4-a-b)/2}$, where R^3 is a monovalent hydrocarbon group selected from the group consisting of alkyl, alkenyl, and aryl groups, a is 0 or a positive number, b is a positive number, and $a + b$ is a number from 0.75 to 2.5; and (E) 0.01 to 10 weight parts of a condensation reaction promoting catalyst comprising the steps of heating and mixing components (A) and (B) and then adding components (C), (D), and (E) and mixing.

18. A method as defined in Claim 17, further comprising mixing components (C), (D), and (E) with a silica powder having a BET specific surface of $50 \text{ m}^2/\text{g}$ or greater, and adding the resulting mixture the heated mixture of components (A) and (B).

T0220133650